

1
2
3
4 SHUTTER WINDOW/DOOR AND METHOD
5
6

7 CROSS-REFERENCE TO RELATED APPLICATIONS
8

9 This Application is a Continuation-In-Part of allowed and co-pending Application
10 S/N 09/612,137, filed July 7, 2000; which is a Continuation of Application S/N 08/902,116, filed
11 on July 25, 1997, now patented; which in turn is a Continuation of Application S/N
12 08/650,802, filed May 20, 1996, abandoned; which is a Continuation-In-Part of
13 Application S/N 08/400,441, filed March 6, 1995, abandoned; which is a Continuation
14 of Application S/N 08/179,221, filed January 10, 1994, abandoned.
15
16

17 FIELD OF THE INVENTION
18

19 The present invention relates to the construction of buildings, and more
20 particularly closures for windows or doors. Specifically the invention relates to closures
21 for a window or a door in which the unit is completely assembled, framed, and includes
22 a shutter system suitable for operations in areas where hurricane resistant closures are
23 desired.
24

25 BACKGROUND OF THE INVENTION
26

27 In the constructions of buildings, particularly housing of large scale, low
28 cost dwellings, the cost of installing windows and doors is magnified by the necessity
29 for utilizing several trades in order to frame-in the window, and then place the window
30 in position, and subsequently provide for a shutter system suitable for withstanding
31 hurricane loads, as required by the Southern Florida Building Code, Miami-Dade
32 County Code, and similar codes.

1 Contractors normally contract out the plumbing, excavation, slab, and
2 masonry work which is usually concrete block. Therefore, what is desired is a product
3 which is factory dimensioned to close tolerances which includes not only a frame for the
4 window or the door, but an integral shutter system which can be selectively employed
5 to secure against intrusion, burglary, vandalism, wind storms, hurricanes, and the like.
6 Recent building codes have required masonry block contractors to frame in building
7 opening with cast concrete which results in tolerances of 1/4 inch or less on each side
8 of the opening and also as to top and bottom. Planarity is insisted upon on the tops
9 and sides, whereas the bottom of the opening is left to finishing at the time the opening
10 is filled with a window, door, screen complex, or other structural member. As a result,
11 closer dimensional tolerances are required for the installation of windows, doors, and
12 particularly storm shutters. Working to these tolerances also requires ongoing
13 installation steps which, when supplied with dimensionally stable frames and closures,
14 are easier to fulfill.

15 16 17 DESCRIPTION OF THE PRIOR ART

18
19 The art of shutters and panels for covering openings in buildings and
20 vehicles is long standing. Some of these structures have been intended for protection
21 against storm winds and flying debris, and yet lack sufficient strength to do the job
22 reliably. In addition, individually bolted panels can be awkward or unappealing because
23 they are bulky, obstructive and conspicuous, or have too many separate parts to be
24 economical to manufacture. Moreover, these panels all require extra storage space off
25 season.

26
27 U.S. Patent 4,634,172, issued January 6, 1997 to Duda, discloses a rain
28 sealing mechanism for securing a panel to a recreational vehicle. The panel shown in
29 the Duda patent is intended to be merely incidental to a flexible connector which
30 secures the panel. Yet for purposes of the present application, the Duda panel is of
31 greater interest. Duda illustrates a deployable panel formed of a series of elongate
32 plates having pivotally interlocking opposing edges including a C-shaped rail along one

1 edge and a bead along the opposing edge. The rail and bead are sized so that the
2 bead of one plate is retained within the rail of an adjacent plate. The composite panel
3 is stored by gathering the interlocking plates into a roll on a spool. The width of the
4 opening in the C-shaped rail is such that the adjacent panel abuts one edge of the
5 opening when the panel is fully opened and abuts the other opening edge when the
6 panel is fully closed. A problem with Duda, if used for storm protection, is that the
7 deployed panel presents a substantially planar composite sheet which is relatively
8 susceptible to bending and crushing failure from object impact. Another problem is that
9 the locking strength of the plate edge structure is limited to the abutment of a plate face
10 against a single opening edge in an adjacent plate. Still another problem is that the
11 plates forming the panels cannot be collapsed face-to-face for compact storage.
12

13 U.S. Patent 4,128,120, issued December 5, 1978 to Frey, and U.S.
14 Patent 4,644,724, issued February 24, 1987 to Schijf, both reveal panels made up of
15 plates very similar to those of Duda. Frey and Schijf once again have a C-shaped
16 channel along one plate edge interlocking with a bead along an adjacent plate edge,
17 and open into a substantially planar configuration. As a result, Frey and Schijf present
18 the problems of Duda.
19

20 U.S. Patent 4,433,714, issued February 28, 1984 to Barber, teaches a
21 roller shutter door formed of a series of horizontal plates with pivotably inter-engaged
22 edges. One edge is curved back over the plate to form a C-shaped cross-section, and
23 the opposite edge is curved back over the opposite side of the plate in a slightly smaller
24 C-shaped cross-section. The smaller C-shaped edge of one plate fits into the larger
25 C-shaped edge of an adjacent plate. To reduce slack between the interlocking plate
26 edges, a strip of resilient material is placed inside the smaller C-shaped edge. The
27 plates are bowed to provide a certain degree of corrugation in the deployed panel, but
28 there is a lack of strength at the edge joints which is similar to that described above for
29 Duda. Another problem is that the plates are all convex in the same direction, and thus
30 cannot be collapsed face-to-face into a compact stack.
31
32

1 U.S. Patent 3,516,470, issued June 23, 1970 to Kurz, illustrates a
2 removable storm shutter including a series of hinged interlocking plates. These plates
3 ride in side channels to collapse substantially in a stack and to deploy into a
4 substantially planar storm panel. Kurz presents the problems identified for Duda. The
5 cross-sectional shape of the plates prevents them from collapsing to an extent that
6 hinges abut; see FIG. 3.

7
8 U.S. Patent 4,723,588, issued February 9, 1988 to Ruppel, and U.S.
9 Patent 4,972,894, issued November 27, 1990 to Machill, disclose similar versions of a
10 roller shutter or curtain. The shutters are formed of a series of elongate plates, each
11 having two spaced apart sheet metal face portions closed at their mutual edges. The
12 plates are either left hollow, or are filled with an insulating material. A C-shaped
13 channel is formed at one longitudinal edge, having a flange engagement portion
14 extending part way across its open end. The other longitudinal edge is bent back into
15 a hook-shaped curve to fit into the channel of an adjacent plate and to hingedly
16 interlock with the flange engagement portion along the channel. The problems of
17 Ruppel and Machill are similar to those of Kurz and Duda. Also, as in Barber, the
18 plates are all convex in the same direction, preventing compact face-to-face collapse.

19
20 U.S. Patent 5,099,904, issued March 31 to Susnar, reveals a folding
21 security shutter. The Susnar shutter is formed of an interlocking series of vertical plates
22 riding in top and bottom tracks. During assembly, a bead on each plate longitudinal
23 edge slides into one of two channels in a separate hinge strip. One hinge strip is
24 needed to connect each adjacent pair of plates edges. A problem with Susnar is that
25 the plates and hinge strips are separate pieces, requiring the cost of two extrusions
26 rather than one, and the further cost of assembling the hinge strips and plates.

27
28 Panels formed of plates which do not collapse face-to-face include those
29 disclosed in U.S. Patent 4,972,894, issued November 27, 1990 to Machill; U.S.
30 Patent 4,128,120, issued December 5, 1978 to Frey; and U.S. Patent 4,037,639, issued
31 July 26, 1977 to Jones. The plates of U.S. Patent 3,924,671, issued December 9, 1975
32 to Gates, fold convex face to convex face and thus do not become fully compact. Still

1 other patents covering loosely related subject matter include U.S. Patent 2,351,656,
2 issued June 20, 1944 to Auten; U.S. Patent 3,401,734, issued September 17, 1968 to
3 McCabe; and U.S. Patent 2,641,018, issued June 9, 1953 to Snyder.

4
5 Over the course of the prosecution of the parent Application, Examiner
6 Blair Johnson cited the following references: U.S. Patent A 790,632 to Hall; U.S. Patent
7 3,670,797 to Sassano; U.S. Patent 3,924,671 to Gates; U.S. Patent 5,097,883 to
8 Robinson et al.; U.S. Patent 5,469,905 to McKinney et al.; U.S. Patent 5,549,148 to
9 Figueiredo et al.; U.S. Patents 5,566,739 and 5,740,850 both to Hoffman; and U.S.
10 Patent 6,148,895 to Biggers the Applicant of the present invention.

11
12 All of the above identified patents fail to show a working combination of
13 a door or window in combination with an integral pre-dimensioned frame which includes
14 a retractable shutter system of the type necessitated for hurricane protection,
15 prevention of vandalism and burglary, and the like. Hence Applicant has not only a
16 novel shutter system for panels to insert in a building opening but the shutter system
17 and its frame ultimately include an integral window or door for installation as a unified
18 package in a building opening.

19
20 It is thus an object of the present invention to provide a folding storm
21 panel package which forms a composite panel with pronounced corrugations when
22 deployed, for reliable strength in protecting its self-contained window or door against
23 wind-driven projectiles.

24
25 It is another object of the present invention to provide such a panel and
26 window or door package which has double-locking characteristics for stronger joints
27 between deployed plates, again to withstand projectile impact.

28
29 It is another object of the present invention to provide such a shutter panel
30 package formed of plates which are cross-sectionally bowed for strength across a wide
31 span and yet are configured cross-sectionally to be capable of collapsing face-to-face
32 and thus occupy minimal space.

1 It is still another object of the present invention to provide such a panel
2 package in which each plate and its plate hinge structures may be extruded together
3 as one piece for simplicity and minimized cost.

4
5 It is finally an object of the present invention to provide such a shutter
6 panel window or door package which is relatively inexpensive to manufacture, install
7 and maintain. A related object of the invention is to develop a system for installing the
8 shutter panel, window or door package with shimming, and fitting techniques,
9 accommodating the tighter dimensional standards now being directed to contractors.

10
11 In view of the foregoing, it is a principal object of the present invention to
12 provide a pre-dimensioned system including a window or a door in combination with the
13 frame for the window or the door, and in which the frame mounts a shutter system for
14 raising or lowering, and which in the lowered position will conform with the vast majority
15 of the building codes with regard to hurricane protection. As such, withstanding winds
16 of 125 mph, and withstanding the impact of a 6ft. 2 x 4 at 34 mph are exemplary of the
17 requirements that the shutter must meet.

18 19 20 SUMMARY OF THE INVENTION

21
22 The present invention evolved from the development of a single generally
23 rectangular frame, with extruded guides on the lateral sides, which guides contain
24 tracks for a retractable shutter system, and similarly contain channels for the mounting
25 of a window or a door. Important to the invention is the universality of the channels for
26 mounting the windows or the doors so that a wide variety of commercial window or door
27 structures may be employed with the shutter system. On the other hand, the shutter
28 system utilizes pleated plates which are desirably formed from a single extrusion and
29 cut to length in accordance with the dictates of the width of the opening. At the ends
30 of the shutter panels, provision is made for a guide assembly which is secured
31 internally of the tracks on the lateral sides of the frame. The bottom of the frame
32 structure is left open so that the window can be inserted from the bottom, or the door

1 can be inserted from the bottom thereby providing a cover at the top against the ingress
2 of rain or other contaminants, while permitting drainage from the bottom. In some
3 applications such as a beach house, the window or door may be omitted, and yet the
4 building fitted securely with a pre-packaged frame and shutter system. Also, a plate
5 glass picture window may be protected by the instant shutter system. In one
6 embodiment, means are provided for removing and replacing the shutter system and
7 shutter panels, simply and expeditiously, which does not require the removal of any
8 cement, stucco, or any other permanent securing materials. Replacement with a
9 different set of shutters, or even replacing single panels, and replacing the same is
10 accomplished inexpensively and non-destructively.

11
12 A more specific aspect of the invention includes a mounting which
13 ensures that the plates which form the shutter panel will be held in tension. A
14 concomitant feature results from the utilization of a tension member on both sides
15 which engages the lowest one of the plates, thereby upon lifting, no secondary jam or
16 cross bar is required to support the weight of the plurality of plates which form the panel
17 of the shutter.

18
19 Various options are available for the positioning of the guide mechanism,
20 that is, at the mid-portion of the plates, or at an outer or inner edge. In addition, the
21 tension means for raising the unit may be applied separately, depending upon where
22 the guide means are located in the track.

23 24 DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

25
26 Further objects and advantages of the present invention will become
27 apparent as the following description proceeds, taken in conjunction with the
28 accompanying illustrative drawings in which:

29 FIG. 1 is a perspective view of a building normally having two or more
30 doors and two or more windows. Each of the building openings are developed to
31 accept a window or a door frame. Exploded perspectives appear of an exemplary door
32 and window. In addition there is a depiction, somewhat diagrammatically, of the two

1 frames complete with shutter system lying flat in anticipation of either a door or a
2 window being inserted from the bottom;

3 FIG. 2 is a front view of a typical illustrative window system to show the
4 relationship between the shutter and the contained window in the interior portion;

5 FIG. 3 is a cross-sectional view of the window of FIG. 2 illustrating the
6 accordion configuration of the closed and deployed panel and its respective plates, and
7 more particularly showing their relationship with the interior window;

8 FIG. 4 is a close-up side view of four plates of the inventive panel in the
9 deployed position showing the edge hinge structures in greater detail;

10 FIG. 5 is a close-up side view, as in FIG. 4, with the panel plates in the
11 folded position;

12 FIG. 6 is a close-up side view of a first tubular portion of a plate edge,
13 illustrating the first and second inwardly projecting stop flanges;

14 FIG. 7 is a close-up side view of a second tubular portion of a plate edge,
15 illustrating the first and second outwardly projecting stop flanges;

16 FIG. 8 is a cross-sectional top view of the inventive guide members and
17 the ends of a plate riding in the guide members;

18 FIG. 9 is a fragmented perspective view of an end of a panel plates
19 showing, in exploded relation to their plate mounting positions, the guide and opening
20 stop assemblies of the first embodiment. Portions of panel plates interconnected with
21 the fragmented plate are also shown;

22 FIG. 10 is a perspective view of a building opening fitted with the second
23 embodiment of the inventive panel package, shown in a partially deployed position.
24 One of the channel members is broken away to reveal the rope, spool and rope
25 engaging assemblies at an end of every other plate in the panel;

26 FIG. 11 is a broken away perspective view of two interconnected plates
27 in a deployed, corrugated position, the lower plate being pivotally connected to a
28 window sill anchoring member with a center tubular plate channel which becomes the
29 lifting point on the bottom elongate plate;

30 FIG. 12 and 13 are broken away perspective close-up views of the hinge
31 structure first and second tubular portion of a given plate, common to both preferred
32 embodiments;

1 FIG. 14 is a fragmented perspective view of an end of a panel plate, as
2 in FIG. 9, showing in exploded relation to their plate mounting positions the fastener
3 guide and fastener opening stop assemblies of the first and second embodiments, and
4 the rope engaging assembly of the second embodiment only. Portions of panel plates
5 interconnected with the fragmented plate are also shown;

6 FIG. 15 is a cross-sectional top view of the apparatus, as in FIG. 8, with
7 the rope engaging assemblies added, as described in the description of the second
8 preferred embodiment.

9 FIG. 16 is a transverse sectional view through a typical fixed glass window
10 showing the details of the installation;

11 FIG. 16A is an enlarged bullet section of the window frame shown in
12 FIG. 16;

13
14 FIG. 17 is an alternative view of a transverse section of a window from
15 that of FIG. 16, showing alternative framing, shimming, and stucco application;

16 FIG. 18 is an end view taken in section from the lower portion of the
17 window and plates shown in FIG. 16;

18 FIG. 19 is a view in similar scale to that of FIG. 18 but showing the upper
19 portion of the same window and plates and the joinder of the frame to the overlying
20 portion of the window opening;

21 FIG. 20 is yet another alternative transverse view showing the utilization
22 of three window/door panes which could be a sliding glass door, fixed glass door, or
23 screen; and

24 FIG. 21 shows an alternative embodiment showing a fixed glass window
25 and taken from the same vantage point as FIG. 16 but utilizing a removable slide guide
26 housing and guide.

27 28 DESCRIPTION OF THE FIRST EMBODIMENT

29
30 All embodiments of the subject invention include a window or door
31 combination 1 which includes either a window 2, or a door 3. Each of the respective
32 windows 2, or doors 3, fit into a window opening 4, or a door opening 5. These are

1 shown, not in great detail in FIG.1, but are illustrative of how the entire system can be
2 manufactured and delivered to the job site, where the window or door is to be installed.
3

4 As best shown in FIGS. 2 and 3, the composite frame 10 surrounds the
5 sides and top of the window/door shutter combination 1. To be noted is that the lower
6 portion is left open for purposes of securing, in accordance with the mandates of the
7 job site.
8

9 Particularly as shown in FIGS. 2 and 3, the composite frame 10 is
10 covered by a panel assembly 12. The panel assembly 12, in turn, is formed when a
11 plurality of plates 14 are permitted to lower between the two sides of the composite
12 frame 10 and cover, with all of the plates 14 extended, the preselected building
13 opening 16 into which the window 2 or the door 3 will be inserted in combination with
14 the window/door shutter combination 1.
15

16 Turning now to FIG. 8, it will be seen that the side extrusions or lateral
17 guide members 20 run from top to bottom on the lateral sides of the composite
18 frame 10, and contain inner tracks 96 and outer tracks 98. Describing the plates 14,
19 as illustrated in FIGS. 4 through 7, and 11 through 13, attention is directed to the
20 specific of the sides 20 or more specifically referred to as lateral sides guide
21 members 20. As noted in FIG. 8, the sides 20, at the rear portion have U-shaped
22 holder 24 defining a window or door 13 receiving channel area 25 which is on the
23 interior portion of the sides 20 when mounted in a dwelling.
24

25 In FIG. 8, it will also be seen that the central portion of the sides 20, which
26 is utilized for the guide mount assembly 90 is formed to have inner tracks 96 and outer
27 tracks 98. Guide slide stop 116 provided interiorly of the inner tracks 96 are engaged
28 rollingly by the guide inner roller 112. The wheel carrier 118 is secured to its respective
29 plate 14 by means of the guide mount assembly 90 which, as shown in FIG. 9, engages
30 coil spring 95 and wheel carrier 118, ultimately secured by the guide plate connector 99
31 to its adjacent plate 14.
32

1 The coil spring **95** and the dimensions of the wheels **120** are so
2 proportioned and oriented that the compression of the coil spring **95** on the wheel
3 carrier **118** translates into a compressive force on the inner track **96** direction of force
4 (arrows), which in turn, reacts to place the guide mount assembly **90** and the guide
5 plate connectors **99** to apply a tension force (arrows) to the plate **14**. This tension
6 force, importantly, when taken in conjunction with the corrugations **22** plate structure
7 to be described hereinafter, imparts additional rigidity to the plates **14**, particularly
8 because the plates are curvilinear and oriented convex downwardly.

9
10 As noted in FIGS. **8** and **15**, the opening stop assembly rollers **130**, on
11 the exterior portion of the plates **14**, will rollingly engage the outer guide channel **20A**
12 when deployed. Similarly, the guide inner roller **112** engages the guide slide stop **116**
13 of the guide chamber **86**.

14
15 The plurality of folded plates **14**, and their respective hinge assemblies **30**
16 are illustrated in detail in FIGS. **4** through **7**. There it will be seen that each plate **14**
17 has an end. These ends are either the plate outer edge **32**, or the outer tube
18 portion **36**. The plate outer edge **32** is the upper face and therebeneath is the concave
19 inner face. The plates **14** are oriented so that each of the plates **14** faces convex
20 downwardly to thereby present a stronger structure in the fully deployed or retracted
21 configuration. As will be noted in cross-section in FIGS. **12** and **13**, the plate inner
22 edge **34** is designed to be slidably secured interiorly of the outer edge tube portion **36**
23 through the outer edge slot **42** thus defining hinge assembly **30**.

24
25 The inner tube portion **52**, as shown in FIG. **12**, has an inner stop
26 flange **54** and an inner stop **74**. The outer tube portion **36** has an outer edge slot **42**
27 which receives the smaller plate inner edge **34**. The stops **54**, **74** of the plate inner
28 edge **34** are proportioned to engage the corresponding inner stop **76** and the outer
29 stop **72** of the large outside tube portion **36**. The stops **54**, **74** are separated by inner
30 slot **80**. A drain groove **81** is formed opposite the inner slot **80**. In such a structure, the
31 ends or lateral edges of the plates **14** can be stacked or pleated to the configuration in
32 the folded state, as best illustrated in FIG. **5**. In FIG. **5** it will be seen that the adjacent

plates actually have tangential contact each with the other which holds the folded pleated plates **14** of the stored panel assembly **12** to an irreducible minimum in thickness, and therefore handily stores interiorly of the optional top storage member **100**.

Having described the pleated nature of the panels, attention should be directed to FIG. **10** where the raising and lowering of the panels, from storage into deployed and deployed into storage configuration is shown as controlled by a rope or cable **140** wound around the spool **142**. The rope or cable **140** extends through alternate ports **156** in the centrally mounted cylinder tip **154**, particularly as shown in FIG. **14**, has the rope knotted therebeneath. In this fashion the rope pulls up one plate **14** at a time as the plates pleatedly engage each other in the configuration as basically shown sequentially between FIGS. **3** and **4** which is the deployed configuration and FIG. **5** which is the storage configuration. More specifically, as shown in FIG. **14**, the rope or cable **140** penetrates the cylindrical tip **154** and is secured by a knot. Alternatively, as shown in FIG. **10**, the guide mount assembly **90** and wheels **120** can be secured at the central position of the plate **14** by utilizing the guide mount assembly **90** and wheels **120** can be secured at the central position of the plate **14** by utilizing the guide mount assembly **90** and wheels **120** can be secured at the central position of the plate **14** by utilizing the guide mount assembly **90** to engage the plate channel **152**, as illustrated in FIG. **16** and **20**. That is to say, the showing in FIG. **14** can be reversed so that the wheel carrier **118** and its associated wheels **120** take the plate mid-position as shown in FIGS. **16** and **20**, with the tension member such as rope **140** being secured to the wheel carrier **118**. In this fashion maximum stability is imparted to the assembly since the weight of the panels **12** pivots centrally about the guide mount **90**. Similarly, when raised by the rope **140**, the weight of the panel assembly **12** and the individual plates **14** is neatly balanced about the guide mount **90**. As the panel assembly **12** and its associated plates move upwardly or downwardly, the opening stop assembly rollers **130** engage the outer guide channel **20A**. This engagement is best shown at the left hand portion FIG. **10**.

While FIG. **11** shows the plate channel **152** in a longitudinal central position of the plate, additional ribs **14** are provided for strengthening, as shown in the lower face of the plates **14** in FIG. **11**. FIG. **11** also shows the optional sill bar **162**

1 which bottoms out at the bottom of the opening, whether it be a window or door. Sill
2 latch 164 is provided at the bottom of the sill bar 162 for locking, as shown
3 diagrammatically in FIG. 3. Alternative forms of sill bars 162 and locks are
4 contemplated, or the same can be omitted when the minimum weight of the panel
5 assembly 12 permits.
6

7 Various embodiments of the carriage and support for the panel
8 assembly 12 and its plurality of plates have just been described. Since no specific
9 combination has been identified as superior over the others, it will be appreciated that
10 sill activity of the carriage mount on one end of the pleated plates or in a mid-position
11 readily provides one or two embodiments. Alternative positioning of the tension
12 member or rope 140 provides yet another embodiment. When a door is mounted
13 rather than a window, yet another embodiment of the present invention is illustrated.
14 Thus the flexibility of the entire system, proceeding from a single extruded plate 14,
15 becomes evident.
16

17 Numerous installation alternatives exist for the subject composite frame
18 shutter, and window or door. Examples are shown in FIG. 16 through 21.
19

20 As will be seen in FIG. 16, the exterior periphery portions are covered with
21 the outer wall stucco 170, which stucco covers jam block 171 and dry wall 172 primarily
22 on the interior portion of the opening. As will be noted in FIG. 16A, a glass snap brace
23 or trim 206 is employed to secure the window glass in place. The optional side
24 shim 178 is shown as a split wedge member which permits sliding the wedge portion
25 and trimming the edges to snugly take up the space between the edge of the frame for
26 the shutter system and the wall. Wood screw 184 secures the lateral side guides
27 member 20 of the frame to the shims 178. Corner frame assembly 175, 179 surrounds
28 the interior corner of the unit, which is covered over by dry wall 172 to finish the interior
29 of the dwelling. Also to be noted is the cast window sill 204 which is in the interior
30 portion of the room.
31

1 As shown in FIG. 17, the outer wall stucco 170 is applied to the outer
2 portion of window jam block 171. Furring strips 176 and window buck 174 frame the
3 corner portion. The corner portion on the outside is covered by the outer wall
4 stucco 170. The split side shim 178 is also employed. However, the inner portion
5 includes an extended sill 204 and framing by means of dry wall 172.

6
7 FIG. 18 now shows the lower portion of the window where at the bottom
8 it will be seen that it is sloped outwardly for drainage and covered with the outer wall
9 stucco 170. The precast opening sill 302 finishes out the outer lower edge of the
10 opening. There is an optional sill shim 188 and lower furring strip 176 on the inner
11 portion, with dry wall 172 underlying the cast sill 204. The pleating of the plates
12 includes the provision at the very lower portion for a slide pin 198. When the slide pin
13 is open, it permits the removal of the plates or adjustment of the plates or even the
14 replacement of the rope 140. The lower block opening sill 302 is formed with the
15 tapered precast sill portion 192.

16
17 FIG. 19 is taken at the upper portion of the shutter window combination
18 shown in FIG. 18. There will be seen that concrete fasteners 182 are used at the top
19 to secure the frame of the shutter window system to the concrete header precast tie
20 beam 300. The optional header shim 180 with the opposed wedge members is also
21 shown secured by wood screw 184, which on the inner portion of the dwelling is
22 covered over with dry wall 172. At the outer portion, the stucco 170 is formed in order
23 to abut the optional header shim 180. At the outer portion, the stucco 170 is applied
24 uniformly to surround the 90° bend.

25
26
27 The principal difference between the environment shown in FIG. 20 and
28 the other figures is the contemplation of a sliding glass door 190 which can be made
29 up of one sliding member and a static member, two sliding members and a static
30 member, all three members sliding, or two members optionally static or movable in
31 combination with a screen, or finally a multiple member screen. All of these alternatives
32 are optional and illustrative of the flexibility of the invention itself. More specifically note

1 should be taken of the window buck 174 on the interior portion for mounting the window
2 or door, which is overlaid by furring strips 176 and finished off with dry wall 172.
3

4 Finally, the alternative embodiment in FIG. 21 utilizes a single removable
5 washer slide guide 200 in place of the wheels and tracks. The advantage of this
6 construction is that when the shutter portion is totally elevated, access can be had to
7 remove the adjustment screws 306 which permits removal of the entire shutter and its
8 track system for repair, replacement, or adjustment. To provide for this end system a
9 guide inner seat 308 and guide channel outer block 310 nestingly retain the entire
10 shutter system. Otherwise the utilization of furring members, bucks, and related
11 structural members are shown illustrative again of the flexibility of Applicant's inventive
12 system.
13

14 In review it will be seen that a composite frame assembly for either a
15 window or a door, including a preselected and preestablished storm shutter has been
16 disclosed and described. The method of making the unit, and its alternatives have also
17 been described. The method of installation, while straight forward, is virtually
18 impossible without the package. On the other hand, the contractor is assured that the
19 dimensional relationship between the frame, window, or door, and shutter system will
20 be preestablished by carefully dimensioned extrusions in part at the factory before it
21 arrives at the job site. This being the case, the job site is at the installation point for the
22 inventive system which, with a simple application, can be installed by one or two men
23 in a very short period of time. Furthermore, such an installation ensures dimensional
24 accuracy, and permanence in position and operation.
25

26 It will be understood that various changes in the details, materials and
27 arrangements of parts, or method which have been herein described and illustrated in
28 order to explain the nature of the invention, may be made by those skilled in the art
29 within the principle and scope of the invention as expressed in the appended claims.